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(54) **METHOD AND APPARATUS FOR WIDE AREA MULTI-BODY 6D POSE TRACKING SYSTEM**

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**ABSTRACT**

An apparatus and method for tracking the position and orientation of one or more objects in three dimensional space is disclosed. One or more tracked sensor units are each connected with a respective object. Each tracked sensor unit includes one or more light sources and an inertial measurement unit. One or more position sensitive detector tracking devices track the position of the tracked sensor units. Each position sensitive detector tracking device includes a plurality of position sensitive detector sensors combined with optical lenses that focus light from a larger field of view onto each position sensitive detector sensor. The position and orientation of each object in three-dimensional space is calculated from the output of the inertial measurement unit of the respective tracked sensor unit and the output of the one or more position sensitive detector tracking devices in response to light emitted from the one or more light sources of the respective tracked sensor unit.

